

FRESH-DFE: A New Structure for Interference Cancellation

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Abstract

This paper proposes a new structure of decision feedback equalizer that exploits the cyclostationary properties of digitally modulated signals to mitigate interference. In the proposed structure, the forward filter of the conventional DFE is replaced by a cyclic filter. It is assumed that the desired and the interference signals use some mutually different signaling attributes, for example symbol rates, centre frequency etc. The resulting structure is evaluated in the presence of up to six strong interfering signals, a scenario that is typically found in wireless cellular systems. The proposed structure provides performance gains for some modulation formats but it reduces to the conventional DFE for other signal formats.